CLAIMS

1. An isolated variant of the human growth hormone nucleic acid molecule, *GH1*, comprising the following substitution: +1491 C→G, wherein 1491 refers to the position of the nucleotide with respect to this transcription initiation site which is designated 1.

2. An isolated variant of the growth hormone nucleic acid molecule, *GH1*, comprising a nucleic acid molecule that encodes a protein, i.e. a GH protein, including the substitution Ile179Met.

3. An isolated nucleic acid molecule according to claim 1 or claim 2, wherein said molecule is either gDNA, cDNA or mRNA.

4. A transcript of the nucleic acid molecule according to claims 1, 2 or 3.

5. An isolated polypeptide encoded by the nucleic acid molecule according to claims 1, 2 or 3.

6. An isolated polypeptide which is a variant of the growth hormone protein, GH, and which includes the substitution Ile179Met.

7. A screening method for screening an individual suspected of having dysfunctional GH which screening method comprises the steps of:

(a) obtaining a test sample comprising a nucleic acid molecule of human *GH1* gene from an individual;

(b) sequencing said molecule;

(c) examining said sequence for a +1491C→G substitution; and

(d) where said substitution exists concluding there is a GH dysfunction.

8. A screening method according to claim 7 wherein said sequencing step involves PCR techniques.

9. A screening method for screening an individual suspected of having dysfunctional GH, which screening method comprises the steps of:

(a) obtaining a test sample comprising a growth hormone, GH, polypeptide from said individual;

(b) sequencing said polypeptide;

(c) examining said sequence for a Ile179Met substitution; and

(d) where said substitution exists concluding there is a GH dysfunction.

10. A kit suitable for carrying out the screening method according to claims 7, 8 or 9, which kit comprises:

(a) an oligonucleotide having a nucleic acid sequence corresponding to region +1491 of a *GH1* gene which region comprises the substitution +1491C→G; and

(b) an oligonucleotide having a nucleic acid sequence corresponding to the wild-type sequence in the region specified in (a); and, optionally,

(c) one or more reagents suitable for carrying out PCR for amplifying desired regions of the patient's DNA.

11. An oligonucleotide suitable for use in the methods according to claims 7-9 and, optionally, provided in the kit of claim 10.

12. An isolated growth hormone polypeptide or protein which contains a Ile179Met substitution and which further provides for differential activation of receptor-mediated cell signalling pathways.

13. An isolated polypeptide or protein according to claim 12 wherein said polypeptide or protein activates the STAT5 pathway but shows reduced activation or the MAPK pathway.

14. An isolated polypeptide or protein according to claim 13 wherein said reduction in activity of the MAPK pathway is less than 70% of the activity of the wild-type GH protein.

15. An isolated polypeptide or protein according to claim 14 wherein said reduced activity is less than 50%.

16. An isolated polypeptide or protein according to claim 13 wherein said reduced activity is less than 45%.

17. An isolated growth hormone polypeptide or protein which is characterised by possessing a reduced ability to activate the MAP kinase pathway.

18. An isolated polypeptide or protein according to claim 17 wherein said MAPK pathway is an ERK pathway.

19. A screening method for screening an individual suspected of having dysfunctional GH which screening method comprises the steps of:

(a) obtaining a test sample from said individual comprising the individual's endogenous growth hormone;

(b) examining said growth hormone to determine whether and to what extent it will activate the receptor-mediated MAPK cell signalling pathway; and

(c) where there is a reduction in MAPK cell signalling, with respect to wild-type GH, concluding there is a GH dysfunction.

20. The use of an isolated nucleic acid molecule according to claims 1-3 for the diagnosis of growth hormone dysfunction or the development of suitable therapies.

21. An isolated polypeptide or protein according to claims 12-18 for the diagnosis of growth hormone dysfunction or the development of suitable therapies.

22. An antibody specific for the isolated growth hormone polypeptide or protein according to claims 12-18.

23. A pharmaceutical composition comprising a nucleic acid molecule according to claims 1-3 in association with a pharmaceutically acceptable carrier.

24. A pharmaceutical composition comprising an isolated polypeptide or protein according to claims 12-18 in association with a pharmaceutically acceptable carrier.

25. A vector comprising a nucleic acid molecule according to claims 1-3.

26. A host cell comprising a vector according to claim 25.

27. A process for preparing an isolated polypeptide or protein according to claims 12-18 which comprises:

(a) culturing a host cell according to claim 26; and

(b) recovering from the culture medium the polypeptide or protein produced by said cell.

28. A polypeptide or protein produced by the method according to claim 27.